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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/755,282	01/08/2001	Sheng-Hsiung Chen	TS99-149B	6859

7590 05/23/2002
George O. Saile
20 McIntosh Drive
Poughkeepsie, NY 12603

EXAMINER

MITCHELL, JAMES M

ART UNIT	PAPER NUMBER
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2827

DATE MAILED: 05/23/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/755,282

Applicant(s)

CHEN, SHENG-HSIUNG

Examiner

James Mitchell

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 February 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 34-39 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 34-39 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. This office action is in response to the amendment filed February 26, 2002.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 34, 35 and 38 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. In regards to claim 34, it is ambiguous as to what is meant by "improved" adhesion. What degree is adhesion improved?

5. Claim 35 and 38 recites the limitation "said conducting bond pads" in Line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claim 34 and 38 are rejected under 35 U.S.C. 102(b) as being anticipated by Yoshioka (U.S 5,357,136).

8. Yoshioka (Fig 1,2a-e; Column 4, Lines 16-30) discloses a bond pad structure (30) comprising a substrate (1) with a plurality of conductive regions (defined by the area of item 15 that is not covered by item 14 and in contact with item 18) on said

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substrate, a passivating layer (14) formed over a portion of said regions with an opening (7) to each region, a barrier layer (18) formed over said passivating layer, and an aluminum (Column 4, Lines 16-17) conductive bonding pad (Item 19, abstract Lines 13-15; pad structure 30) formed over each said region and over said barrier layer whereby an upper surface of said conductive bond pad provides improved adhesion for subsequently formed bonds.

9. In regards to claim 34, the prior art does not appear to disclose that the bond pad provides for an improved adhesion for subsequently formed bonds, however Yoshioka's structure is the same as applicant, as such it inherently possesses the same characteristics.

10. Although Yoshioka does not appear to explicitly teach the statement "for subsequently formed bonds", this statement of intended use does not result in a structural difference between the claimed apparatus and the apparatus of Yoshioka. Further, because the apparatus of Yoshioka is inherently capable of being used for the intended use, the statement of intended use does not patentably distinguish the claimed apparatus from the apparatus of Yoshioka. Similarly, the manner in which an apparatus operates is not germane to the issue of patentability of the apparatus; *Ex parte Wikdahl* 10 USPQ 2d 1546, 1548 (BPAI 1989); *Ex parte McCullough* 7 USPQ 2d 1889, 1891 (BPAI 1988); *In re Finsterwalder* 168 USPQ 530 (CCPA 1971); *In re Casey* 152 USPQ 235, 238 (CCPA 1967). And, claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Danley*, 120 USPQ 528, 531

(CCPA 1959). "Apparatus claims cover what a device is, not what a device does."

Hewlett-Packard Co. v. Bausch & Lomb Inc., 15 USPQ2d 1525, 1528 (Fed. Cir. 1990).

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshioka as applied to claim 34.

13. Yoshioka does not appear to disclose a copper pad, however examiner takes official notice that it would have been obvious to one of ordinary skill in the art to form the pad of Yoshioka with copper, because copper was a well-known material at the time the invention was made for providing reliable electrical contacts.

14. Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshioka as applied to claim 34 and further in combination with Camilletti.

15. Yoshioka does not show the passivating layer consisting of silicon oxide however Camilletti discloses the use of silicon oxide as a passivating layer (Lines 46-47 and 50-51, Column 3).

16. It would have been obvious to one of ordinary skill in the art to modify the device of Yoshioka by incorporating a silicon oxide passivating layer (SiO) in order to protect the device surface from contaminants as taught by Camilletti (Lines 48-49, Column 3).

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17. Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshioka as applied to claim 34.

18. Yoshioka further discloses a conducting bond pad (30) forming an interlocking grid array in 4 bond pad via contact regions (7) per conducting bond pad which inherently increases surface area for improved adhesion, but does not appear to disclose that the via is 100 by 100 microns square and that the size of the structures are about 10 to 25 microns in width and approximately 4 microns in height.

19. In any case, it would have been an obvious matter of design choice bounded by well known manufacturing constraints and ascertainable by routine experimentation and optimization to choose these particular dimensions because applicant has not disclosed that the dimensions are for a particular unobvious purpose, produce an unexpected result, or are otherwise critical, and it appears prima facie that the process would possess utility using another dimension. Indeed, it has been held that mere dimensional limitations are prima facie obvious absent a disclosure that the limitations are for a particular unobvious purpose, produce an unexpected result, or are otherwise critical. See, for example, *In re Rose*, 220 F.2d 459, 105 USPQ 237 (CCPA 1955); *In re Rinehart*, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984); *In re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966).

20. In addition, an interlocking structures or islands (as indicated in applicant's specification on page 20, line 13) are shown in Yoshioka as an array of islands (7, "openings"). As such, since the pad is locked to the islands and conductive regions via

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the barrier layer (Column 4, Lines 6-7 and 25-30), Yoshioka forms an interlocking grid array.

21. Claim 39 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshioka as applied to claim 34 and further in combination with Saran (U.S. 6,232,662).

22. Yoshioka does not show a tantalum nitride barrier layer, however Saran (U.S. 6,232,662) utilizes a barrier layer of tantalum nitride barrier layer (Column 8, Lines 4-8).

23. It would have been obvious to one of ordinary skill in the art to form the barrier layer of Yoshioka with TaN in order to provide a barrier layer consisting of a refractory metal as taught by Yoshioka (Column 3, Lines 67-68).

Response to Arguments

24. Applicant's arguments filed February 26, 2002 have been fully considered but they are not persuasive. With respect to claim 34, applicant argues that an interlocking grid array, of passivating material and conducting material for the bond pad seem not to be disclosed in the prior art. However that argument is moot, because the limitation is not recited in the claim.

25. With respect to claim 37, the argument is considered but found moot in view of new grounds of rejection.

Conclusion

26. Any inquiry concerning this communication or earlier communications from the examiner should be directed to James Mitchell whose telephone number is (703) 305-0244. The examiner can normally be reached on M-F 10:30-8:00.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L. Talbott can be reached on (703) 305-9883. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3432 for regular communications and (703) 305-3230 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

A handwritten signature in black ink, appearing to be 'Jmm', is written above the date.

May 9, 2002